

WHAT IS CLAIMED IS:

1. An exposure apparatus comprising:
  - a reticle stage which holds a reticle;
  - a reticle surface plate which supports said
  - 5 reticle stage;
  - a projection optical system which projects a pattern of the reticle onto a substrate;
  - a shield which surrounds a space between said reticle stage and said reticle surface plate through
  - 10 which exposure light passes, and shields the space from outside; and
  - a gas supply which supplies inert gas into the space shielded by said shield.
2. The apparatus according to claim 1, wherein said
- 15 shield is supported by said reticle stage.
3. The apparatus according to claim 1, wherein said shield is arranged to allow movement of said reticle stage on said reticle surface plate.
4. The apparatus according to claim 1, wherein said
- 20 shield is formed from a plate member.
5. The apparatus according to claim 1, wherein said shield includes an air curtain.
6. The apparatus according to claim 1, wherein said shield includes a hydrostatic bearing disposed between
- 25 said reticle stage and said reticle surface plate.
7. The apparatus according to claim 6, wherein the inert gas supplied to the hydrostatic bearing is also

supplied to the space shielded by said shield, thereby purging the space.

8. The apparatus according to claim 1, further comprising a sheet glass set on said reticle surface plate so as to separate, from the space shielded by  
5 said shield, a space inside an opening which is formed in said reticle surface plate to transmit exposure light.

9. The apparatus according to claim 8, further  
10 comprising a second gas supply which supplies inert gas to the space separated by said sheet glass.

10. The apparatus according to claim 1, further comprising a gas recovery which recovers gas from the space shielded by said shield.

15 11. The apparatus according to claim 1, further comprising:

a sensor arranged to measure a pressure in the space shielded by said shield; and

a controller arranged to control said gas supply  
20 on the basis of the pressure measured by said sensor.

12. The apparatus according to claim 1, further comprising a cleaning gas supply which supplies cleaning gas into the space shielded by said shield.

13. The apparatus according to claim 1, wherein the  
25 cleaning gas includes at least one of oxygen and ozone.

14. The apparatus according to claim 1, wherein the apparatus further comprises:

an illumination optical system; and

an enclosure which surrounds a space between said illumination optical system and said reticle stage through which exposure light passes,

5        wherein said enclosure is arranged such that a gap is provided between a lower end thereof and said reticle stage, and

      said reticle stage has, around the reticle, a top plate with a surface flush with an upper surface of the  
10    reticle.

15.    The apparatus according to claim 1, wherein the apparatus further comprises:

      a substrate stage which holds the substrate; and

      an enclosure which surrounds a space between said  
15    projection optical system and said substrate stage through which exposure light passes,

      wherein said enclosure is arranged such that a gap is provided between a lower end thereof and said substrate stage, and

20        said substrate stage has, around the substrate, a top plate with a surface flush with an upper surface of the substrate.

16.    The apparatus according to claim 1, wherein said shield is so arranged as to prevent an opening of said  
25    reticle surface plate from deviating from a region defined by said shield.

17.    An exposure apparatus comprising:

- a reticle stage which holds a reticle;
- a reticle surface plate which supports said reticle stage, said reticle surface plate having an opening for transmitting exposure light;
- 5 a projection optical system which projects a pattern of the reticle onto a substrate; and
- a sheet glass set on said reticle surface plate so as to separate a space inside the opening of said reticle surface plate from a space above said reticle
- 10 surface plate.
18. An exposure apparatus comprising:
- an optical system;
- a stage which moves with a flat object during exposure; and
- 15 an enclosure which surrounds a space between said optical system and said stage through which exposure light passes,
- wherein said enclosure is arranged such that a gap is provided between a lower end thereof and said
- 20 stage, and said stage has, around the flat object, a top plate with a surface flush with an upper surface of the flat object.
19. The apparatus according to claim 18, wherein said optical system includes an illumination optical system,
- 25 and said stage includes a reticle stage.
20. The apparatus according to claim 18, wherein said optical system includes a projection optical system,

and said stage includes a substrate stage.

21. A device manufacturing method comprising the steps of:

installing, in a semiconductor manufacturing  
5 factory, manufacturing apparatuses for various  
processes including the exposure apparatus defined in  
claim 1; and

manufacturing a semiconductor device by a  
plurality of processes using the manufacturing  
10 apparatuses.

22. The method according to claim 21, further  
comprising the steps of:

connecting the manufacturing apparatuses via a  
local area network; and  
15 communicating information about at least one of  
the manufacturing apparatuses between the local area  
network and an external network outside the  
semiconductor manufacturing factory.

23. The method according to claim 22, further  
20 comprising the step of accessing a database provided by  
a vendor or user of the exposure apparatus via the  
external network, thereby obtaining maintenance  
information of the exposure apparatus by data  
communication.

25 24. The method according to claim 23, further  
comprising the step of performing data communication  
between the semiconductor manufacturing factory and

another semiconductor manufacturing factory via the external network, thereby performing production management.

25. A semiconductor manufacturing factory comprising:  
5 manufacturing apparatuses for various processes including the exposure apparatus defined in claim 1;  
a local area network for connecting the manufacturing apparatuses; and  
a gateway for allowing access to an external  
10 network outside the factory from the local area network,  
wherein information about at least one of the manufacturing apparatuses is communicated.

26. A maintenance method for the exposure apparatus defined in claim 1 that is installed in a semiconductor-  
15 manufacturing factory, comprising the steps of:

making a vendor or user of the exposure apparatus provide a maintenance database connected to an external network outside the semiconductor manufacturing factory;

20 allowing access to the maintenance database from the semiconductor manufacturing factory via the external network; and

transmitting maintenance information accumulated in the maintenance database to the semiconductor  
25 manufacturing factory via the external network.

27. The apparatus according to claim 1, wherein the apparatus further comprises:

a display;  
a network interface; and  
a computer for executing network software, and  
said display, said network interface, and said  
5 computer enable communicating maintenance information  
of the exposure apparatus via a computer network.

28. The apparatus according to claim 27, wherein the  
network software provides on said display said user  
interface for accessing a maintenance database provided  
10 by a vendor or user of the exposure apparatus and  
connected to the external network outside a factory in  
which the exposure apparatus is installed, and  
information is obtained from the database via the  
external network.